CLAIMS:

WHAT IS CLAIMED IS:

1.   A method for establishing, between a first and a second node, a data flow within a service instance comprising:

sending from a mobile station to a first network node a first request message, said first request message including a service instance identifier, a flow identifier that uniquely identifies a new flow created by the mobile station, and at least one quality parameter for the new flow;

determining at the first node whether a new flow that satisfies the at least one quality parameter can be supported between the first node and the mobile station;

sending from the first node to a second network node a second request message, the second request message including a service instance identifier and at least one quality parameter; and

authorizing at the second node a service instance, identified by the service instance identifier of the second message, that satisfies the at least one quality parameter of the second message.

2.   The method of claim 1 wherein the first node is a radio node and the second node is a packet data switching node.

3.   The method of claim 1, wherein determining at the first node comprises:

determining that a pre-existing service instance, identified by the service instance identifier of the first request message, can support the new flow and its associated at least one quality parameter between the first node and the mobile station; and

sending from the first node to the mobile station a reply message, said reply message including the service instance identifier of the first request message, the flow identifier, and the at least one quality parameter for the new flow;

wherein the service instance identifier of the first and second request messages is the same.

4.   The method of claim 1, wherein determining at the first node comprises:·

determining that a pre-existing service instance, identified by the service instance identifier of the first request message, cannot support the new flow and it's associated at least one quality parameter between the first node and the mobile station;

determining that the new flow is to be within a new service instance that supports the at least one quality parameter; and

sending from the first node to the mobile station a reply message, said reply message including a new service instance identifier that uniquely identifies the new service instance to the mobile station, the flow identifier, and the at least one quality parameter for the new flow;

wherein the service instance identifier of the second request message is the new service instance identifier.

5.   The method of claim 1 wherein the second node receives from a node other than the first node and the mobile station, prior to the sending of the first request message, a subscriber profile that includes a plurality of quality parameters associated with the mobile station.

6.   The method of claim 1, further comprising:

sending from the mobile station to the second network node a filter message, said filter message including the flow identifier, a flow direction for the new flow, and at least one packet filter.

7.   The method of claim 6, wherein the at least one packet filter comprises a plurality of packet filters that uniquely identify the new flow over all other flows associated with the mobile station.

8.   The method of claim 6 further comprising:

following sending the filter message, determining at the first node that the new flow cannot be further supported to meet the at least one quality parameter of the second message;

sending from the first node to the second node a modified second request message,

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the modified second message including the service instance identifier of the second request message and at least one updated quality parameter that differs from the at least one quality parameter of the second request message; and

authorizing at the second node the service instance, identified by the service instance identifier of the second request message, to satisfy the at least one updated quality parameter.

9.   The method of claim 6 further comprising, at one of the first or second nodes, mapping the service instance identifier of the second request message to at least one of the flow identifier and the at least one packet filter.

10.   The method of claim 1 further comprising:

determining a policy to apply to the packet, and mapping the service instance identifier to the policy.

11.   The method of claim 10, wherein determining a policy is at the second node, and the policy is enforced at the second node on the packet sent in at least one of an uplink and a downlink direction.

12.   The method of claim 10 wherein determining a policy is at the first node, and the policy if enforced at the first node for the packet sent at least in an uplink direction from the first to the second node.

13.   The method of claim 10 wherein determining a policy is at the second node, and the policy is enforced at the first node at least for the packet sent in an uplink direction from the first to the second node.

14.   The method of claim 1 further comprising, after authorizing at the second node a service instance, sending from the second node to the first node a registration reply message that informs the first node of the authorization.

15.   A signaling protocol to enable an assured quality on at least one of several flows of a service instance between a radio node and a packet switching data node, comprising:

        establishing a main service instance between a mobile station and a radio node;

        the mobile station signaling the radio station with a service instance identifier, a new flow identifier, and at least one quality parameter for the new flow identified by the flow identifier;

        subsequent to the radio node determining a candidate service instance that can carry the flow so as to satisfy the at least one quality parameter, the candidate service instance being one of a pre-existing and a new service instance, the radio node signaling the mobile station and a packet data switching node with the candidate service instance identifier;

        the packet data switching node signaling the radio node with an authorization that includes the candidate service instance identifier;

        the mobile station signaling at least one of the radio node and the packet data switching node via the radio node with packet filters that uniquely identify the new flow; and

        sending a data packet between the radio and packet data switching nodes on the new flow based on the packet filters.

16.   The signaling protocol of claim 15 wherein the mobile station signaling at least one of the radio node and the packet data switching node via the radio node comprises signaling with packet filters, flow direction, and the flow identifier.

17.   The signaling protocol of claim 15 further comprising signaling from an AAA node to the packet switching data node a series of quality parameters associated with the mobile station.

18.   The signaling protocol of claim 15 wherein the radio node signaling the mobile station and a packet data switching node with the candidate service instance identifier further comprises the radio node signaling the mobile station, in a single signaling message, the candidate service instance identifier and parameters to establish a new traffic airlink.

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19.   The signaling protocol of claim 15 wherein the mobile station signaling the radio station with a service instance identifier, a new flow identifier, and at least one quality parameter for the new flow identified by the flow identifier comprises signaling in a single message.

20.   A mobile station comprising:

a controller for determining that data, to be transferred between the mobile station and a mobile node coupled to the mobile station via an airlink, is one of a first or second data type;

a memory that stores an application program, said application program comprising an association of a first data type with a first set of at least one transport quality parameters and an association of a different second data type with a different second set of at least one transport quality parameters,

the application program further comprising computer instructions to construct a QoS parameter request message that includes a service instance identifier and the first or second set of at least one transport quality parameters associated with the data type determined by the controller; and

a transmitter coupled between the controller and an antenna, for transmitting the QoS parameter request message to the mobile node.

21.   The mobile station of claim 20 further comprising a receiver coupled between the antenna and the controller for receiving a service connect message that includes a service instance identifier and the set of at least one transport quality parameters associated with the data type determined by the controller,

wherein the application program is further for constructing, in response to receiving the service connect message, a filter message that comprises a set of at least one filter parameters and an identifier for a service instance into which data packets filtered by the set of at least one filter parameters are filtered into.

22. The mobile station of claim 21 wherein the identifier for a service instance is a flow identifier that uniquely identifies a flow carried on the service instance into which data packets filtered by the set of at least one filter parameters are filtered into.

23. A base station comprising:

a receiver for receiving, from a mobile station coupled to the base station via an airlink, a QoS parameter request message that includes at least an existing service instance identifier and a set of at least one quality parameters;

a controller coupled to the receiver for determining whether a subject service instance, on which a new flow satisfying the set of at least one quality parameters between at least the base station and the mobile station, is a pre-existing service instance or a new service instance; and

a transmitter coupled to the controller for sending, in response to the controller determining, a service connect message to the mobile station and a registration request message to a packet data switching node, each of said messages comprising a service instance identifier for the subject service instance.

24. The base station of claim 23, wherein the registration request message further comprises the set of at least one quality parameters.

25. A packet data switching node comprising:

a receiver for receiving from a base station a registration request message and a filter message, said registration request message comprising a service instance identifier and a set of at least one quality parameters, and the filter message comprising a set of at least one packet filters;

a controller for determining that a subject service instance identified by the service instance identifier may satisfy the set of at least one quality parameters, and for routing data packets that satisfy each of the set of packet filters along the subject service instance; and

a transmitter for sending an authorization message to the base station in response to the controller so determining.

26.   The packet data switching node of claim 25 wherein filter message further
comprises a flow identifier, and the controller is for routing data packets that satisfy each
of the set of packet filters along a data flow identified by the flow identifier, said data flow
being within the subject service instance.